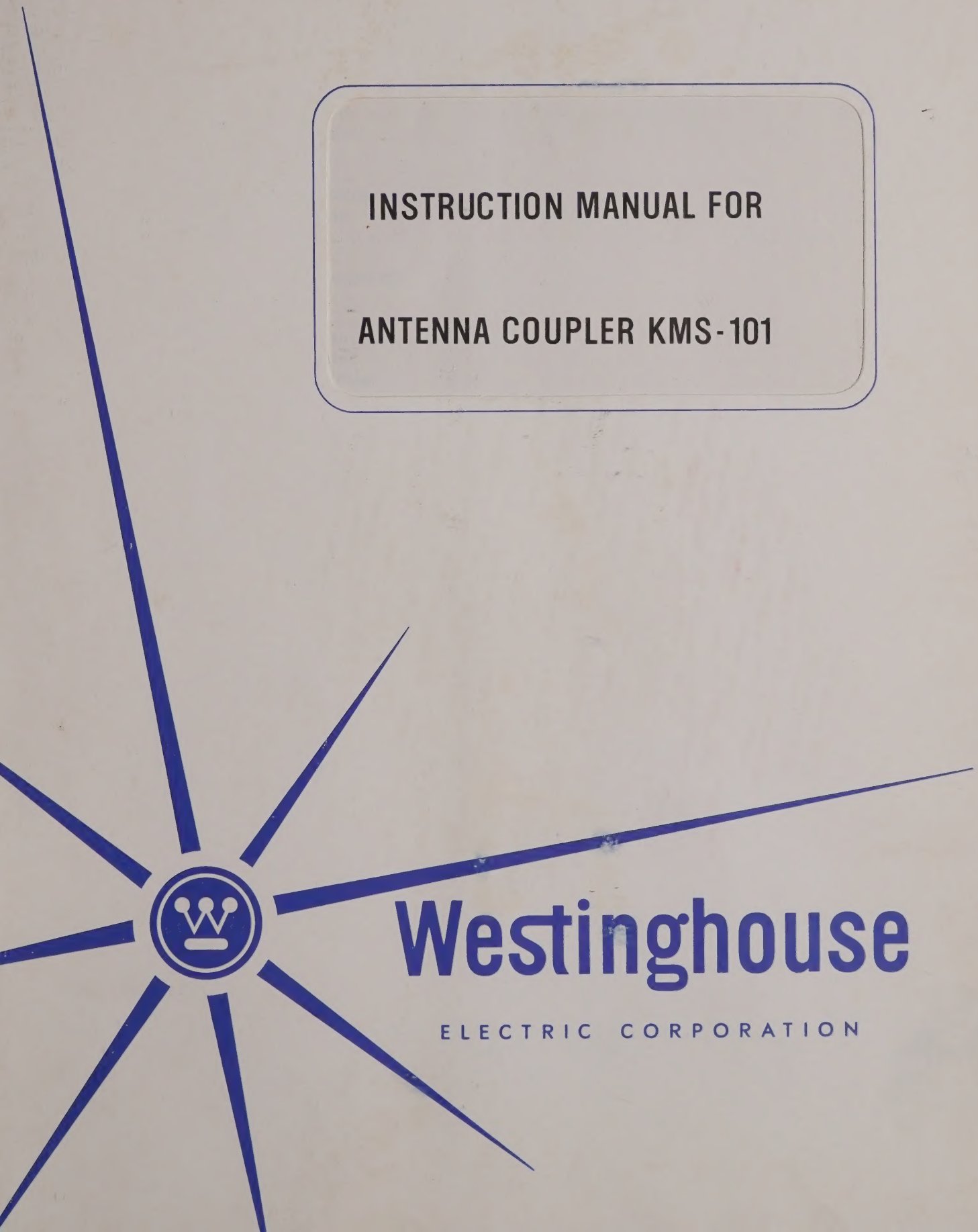
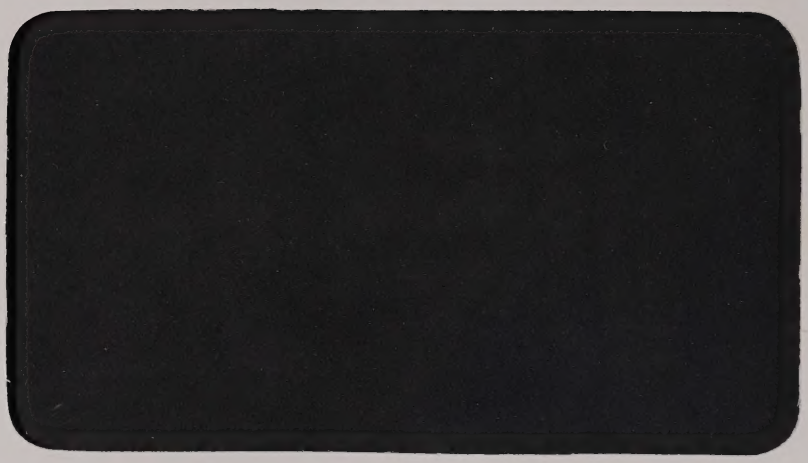
INSTRUCTION MANUAL FOR

ANTENNA COUPLER KMS-101



Westinghouse

ELECTRIC CORPORATION



INSTRUCTION MANUAL FOR

ANTENNA COUPLER KMS-101

WESTINGHOUSE ELECTRIC CORPORATION
SURFACE DIVISION
FRIENDSHIP PLANT

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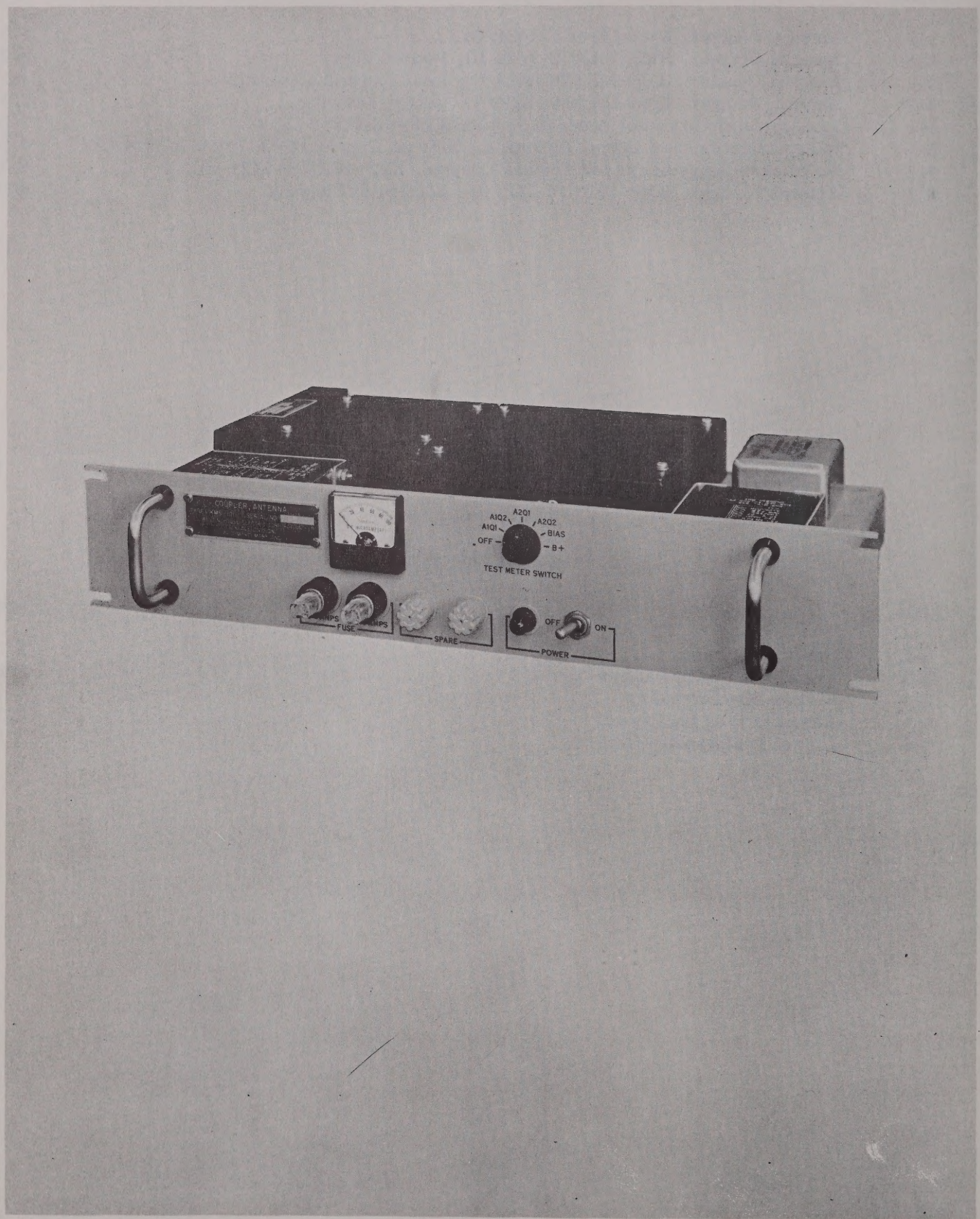


Figure 1-1. Antenna Coupler, KMS-101 (CU-1424/U)

SECTION 1

GENERAL INFORMATION

1-1. SCOPE.

This manual covers the description, installation, operation and maintenance for Antenna Coupler KMS-101. Figure 1-1 is an illustration showing the equipment described in this manual. Instructions for government-furnished materials (GFM) to be used with Antenna Coupler KMS-101 are not discussed in this manual.

1-2. FUNCTIONAL DESCRIPTION.

Antenna Coupler KMS-101 provides coupling between a single source of r-f energy (antenna or other) and as many as eight receiving devices. The circuitry provides wide frequency coverage (2.0 mc through 32 Mc), low noise figure, low intermodulation, low input and output VSWR and a high degree of isolation between outputs. The design also employs a minimum of active components for a very high mean time between failures (MTBF).

1-3. QUICK REFERENCE DATA.

a. Frequency Range: 2 mc through 32 mc

b. Input Impedance: 72 ohms, VSWR 2:1 maximum

c. Output Impedance: 72 ohms VSWR 1.3:1 maximum

d. Intermodulation: Typical 70 db below either of two 0.25 volt signals

e. Isolation (Output to Output): 40 db minimum

f. Isolation (Back to Front): 60 db at 32 mc
90 db at 2 mc

g. Gain: 1.5 ± 1.5 db

h. Noise Figure: 8 db (Typical)

i. Power Input: Nominal 28 watts at 115/230 volts single phase. 48 to 63 cycles or 115 volts single phase 400 cycles.

j. Cascade Operation: Additional antenna connections may be made by connecting couplers in cascade. For example, one coupler may be used with an additional coupler on each output for a total of 9 couplers providing 64 outputs.

k. Phase: When so specified, the coupler provides phase tracking of ± 2.0 degrees between all outputs.

1-4. EQUIPMENT SIMILARITIES.

Antenna Coupler KMS-101 (CU-1424/U) is, in general, equal to or better than coupler types CU-656/U, CU-872/U, CU-168/U and may be used to replace such equipment at a considerable space and power savings.

SECTION 2

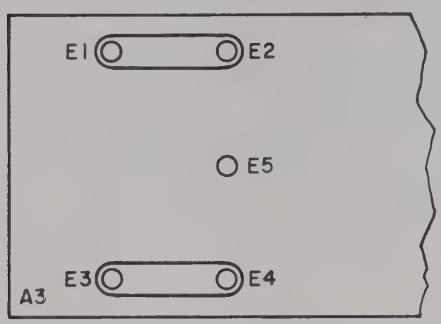
INSTALLATION

2-1. UNPACKING AND HANDLING.

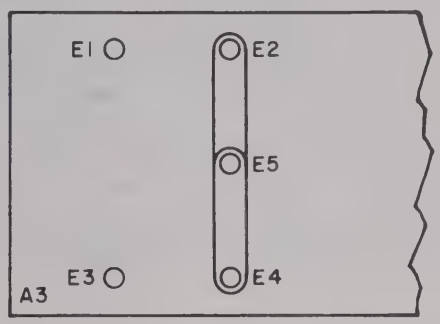
The unit has been packed at the factory and prepared for domestic shipment. Care should be exercised while unpacking and handling to prevent damage.

2-2. POWER REQUIREMENTS.

Antenna Coupler KMS-101 requires 115 volts or 230 volts, single phase, 48 to 63 cps, 28 watts or 115 volts single phase, 400 cps. As shipped from the factory the unit is setup for operation at 115 volts, single phase, 48 to 400 cps. For operation from a 230 volt source mechanical straps must be changed in the unit. The strapping arrangement for both voltages is shown below.



115 VOLT STRAPPING



230 VOLT STRAPPING

The location of the strapping terminals is shown in figure 2-1.

2-3. INSTALLATION LAYOUT.

The unit is designed for standard 19-inch rack mounting. The choice of location is not critical but it is advisable that the unit be placed at a reasonable distance from any high power equipment. Refer to outline drawing, (figure 2-3) for mounting dimensions.

2-4. INTERCONNECTION.

Interconnections of the unit are shown in figure 2-2. No terminating caps are required on unused output jacks. Connections should be made carefully to obtain maximum coupling.

2-5. INSPECTION AND ADJUSTMENTS.

a. Before inspection make certain the POWER switch is in the OFF position.

b. Check all coaxial cables to insure they are in the proper connectors and all connections are secure.

c. Make sure the two fuses and indicating lamp on the front panel are intact and not open.

d. There are no operational adjustments.

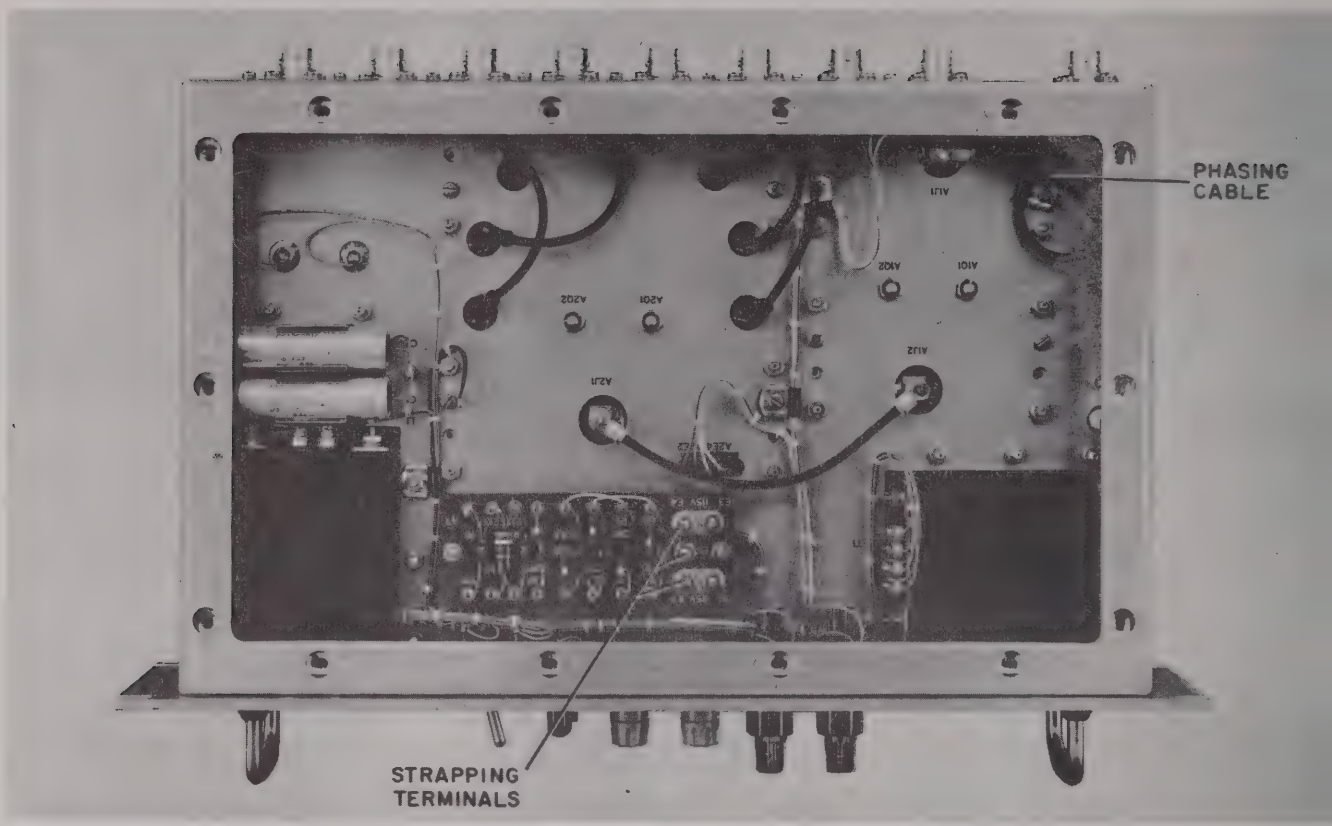


Figure 2-1. Antenna Coupler, KMS-101 (CU-1424/U), Bottom View

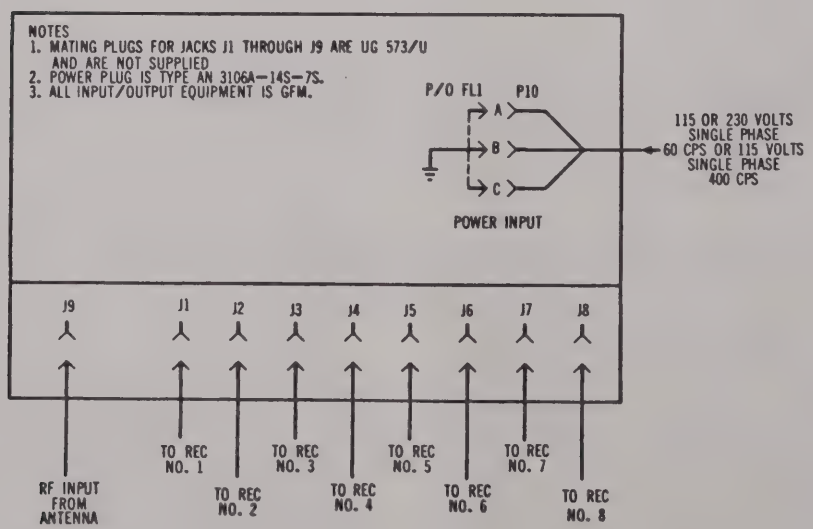
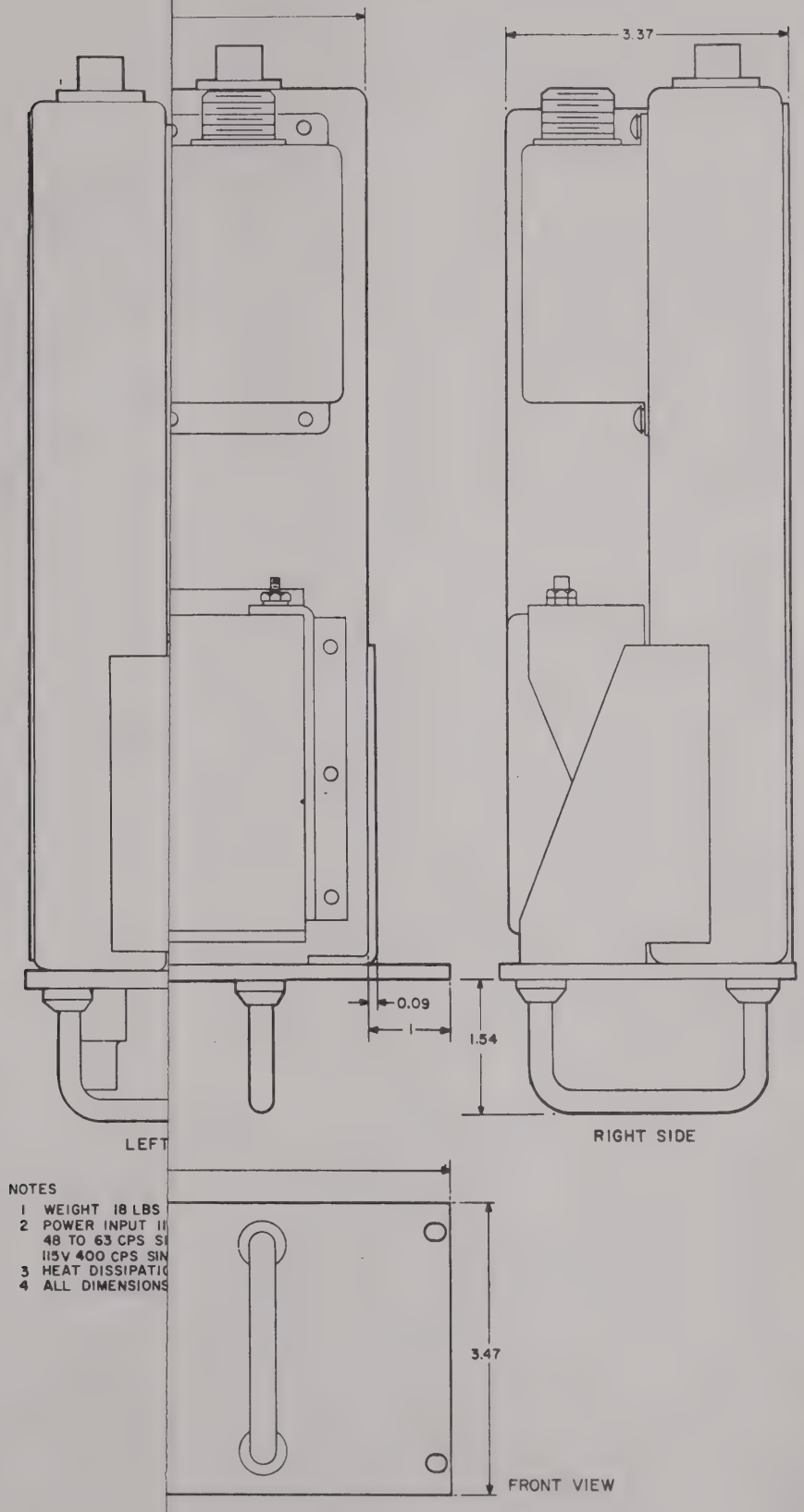


Figure 2-2. Antenna Coupler, KMS-101 (CU-1424/U), Interconnection Diagram



S-101 (CU-1424/U), Outline Drawing

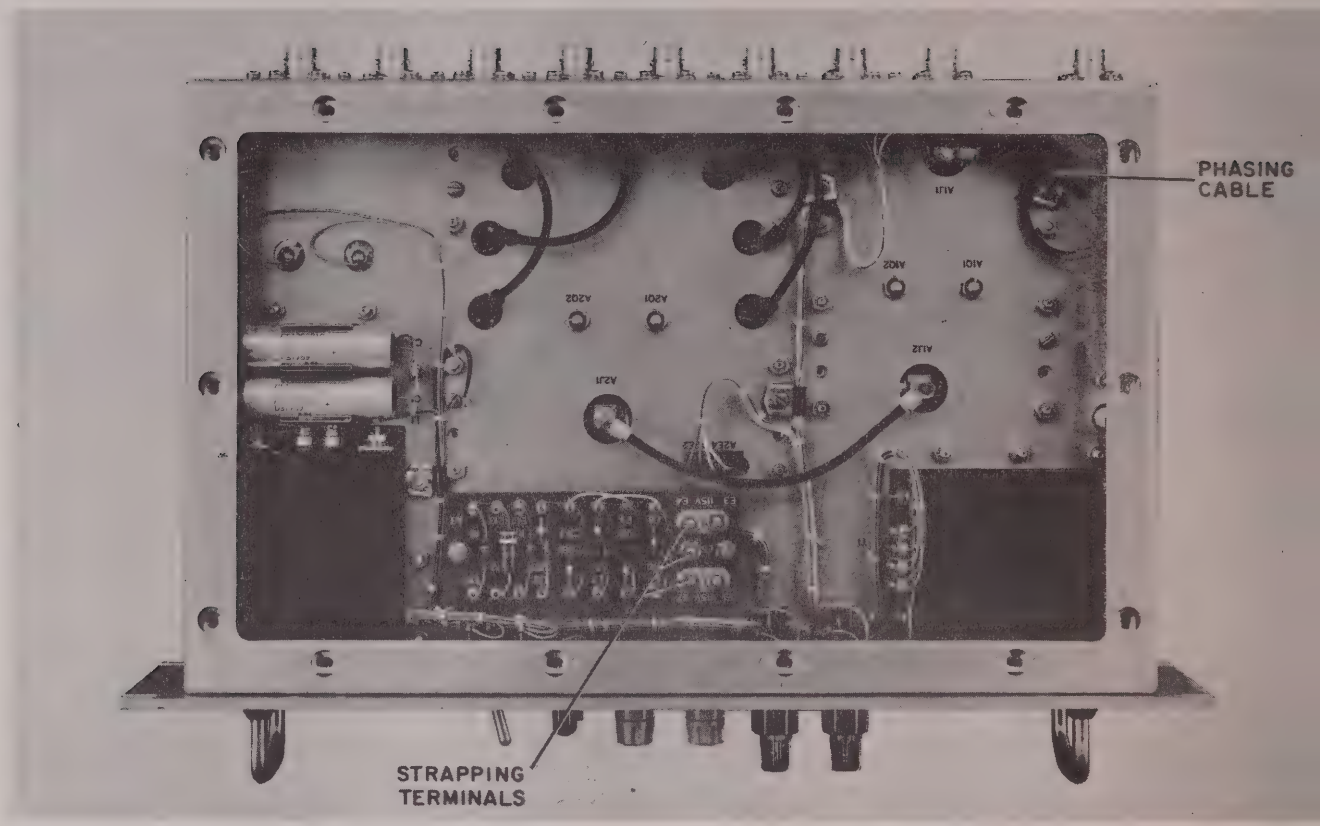


Figure 2-1. Antenna Coupler, KMS-101 (CU-1424/U), Bottom View

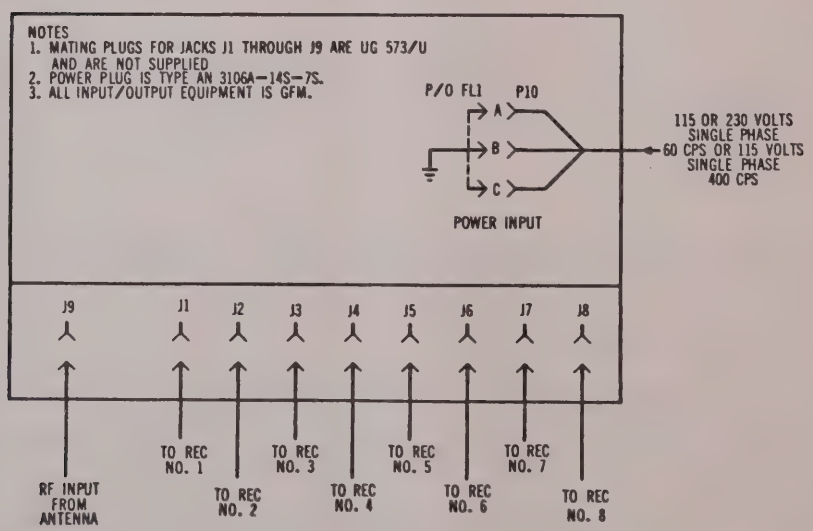


Figure 2-2. Antenna Coupler, KMS-101 (CU-1424/U), Interconnection Diagram

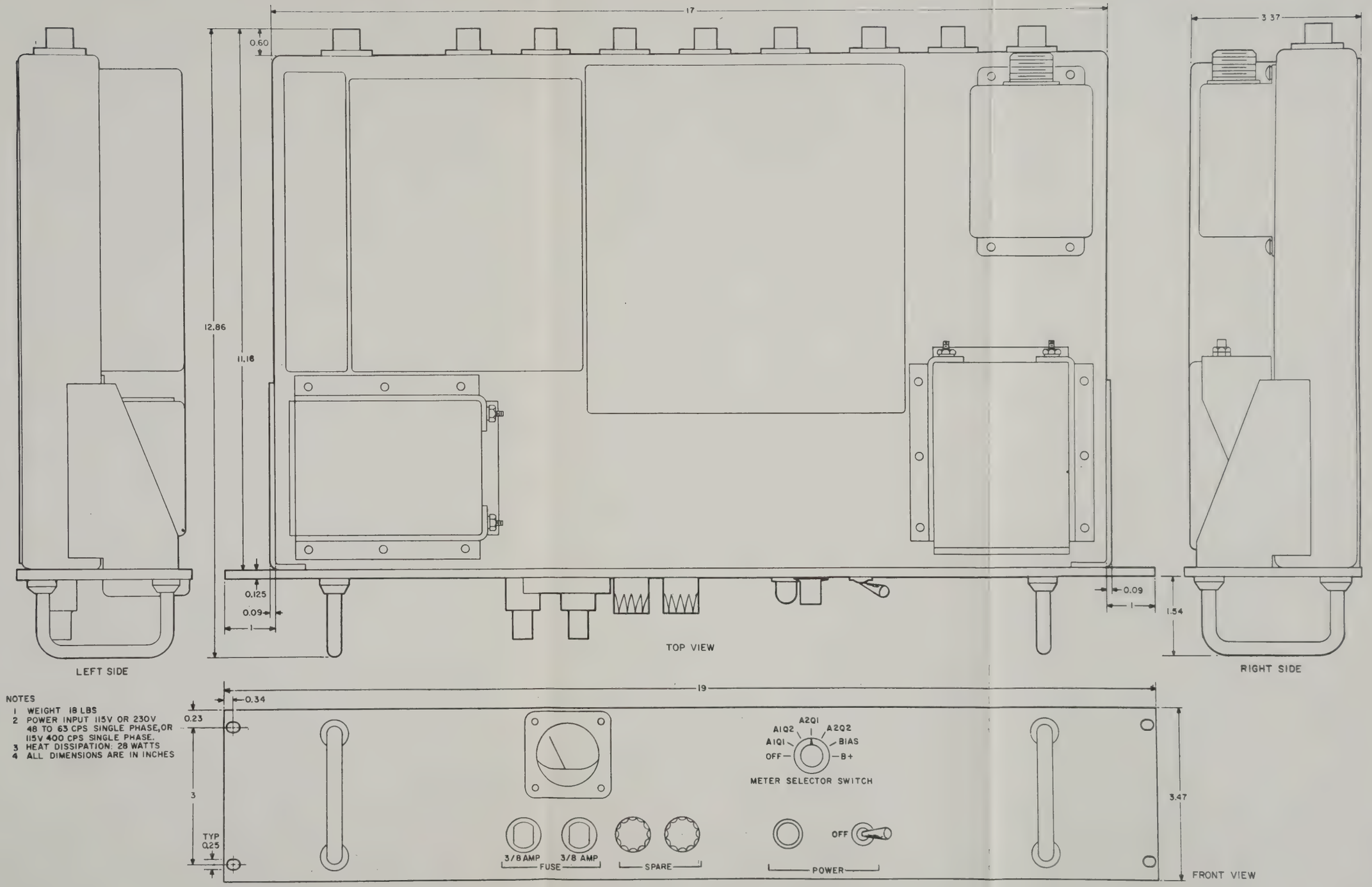


Figure 2-3. Antenna Coupler, KMS-101 (CU-1424/U), Outline Drawing

SECTION 3

OPERATION

3-1. FUNCTIONAL OPERATION.

Antenna Coupler KMS-101 provides optimum coupling between a single antenna and as many as eight receivers. Additional antenna connections may be obtained by connecting couplers in cascade. No operating procedure other than energizing the unit is required. Each receiver may be tuned to any frequency within the pass band (2.0 mc to 32.0 mc) of the antenna coupler.

3-2. OPERATING PROCEDURE.

3-3. Description of Controls. The function of various controls located on the KMS-101 coupler are tabulated in table 3-1. The locations of controls are shown in figure 3-1.

Table 3-1. Control Functions

Number	Name	Function
1, 2	3/8 AMPS FUSE	Protects primary of transformer T1 (both sides of the line are fused).
3	Meter	Provides indications for points selected by the TEST METER SWITCH.
4	SPARE	Holds spare fuses.
5	TEST METER SWITCH	Selects various dc test points for indication on the front panel meter.
6	POWER lamp	Lights to indicate that power is applied to unit.
7	POWER switch	Applies primary power to the unit when placed in the ON position.

3-4. Operation. Normal operation requires only that the unit be energized by placing the POWER switch to the ON position.

3-5. Tuning Adjustment. There are no tuning adjustments.

3-6. OPERATORS MAINTENANCE.

3-7. General. Antenna Coupler KMS-101 is an all solid state device with a very high MTBF. Active elements (transistors and diodes) are soldered into the circuits and are not normally replaced by an operator.

An operator may check and replace the POWER indicating lamp or fuses.

3-8. Operating Checks. It is recommended that routine checks be made for each position of the TEST METER SWITCH. Normal readings for all positions are given in table 3-2. It is NOT NECESSARY for A1Q1 indication to be the same as A1Q2 or for A2Q1 to equal A2Q2 and they should not be so adjusted. These are push-pull pairs and have been factory adjusted for 2nd order intermodulation reduction and not to the same dc levels.

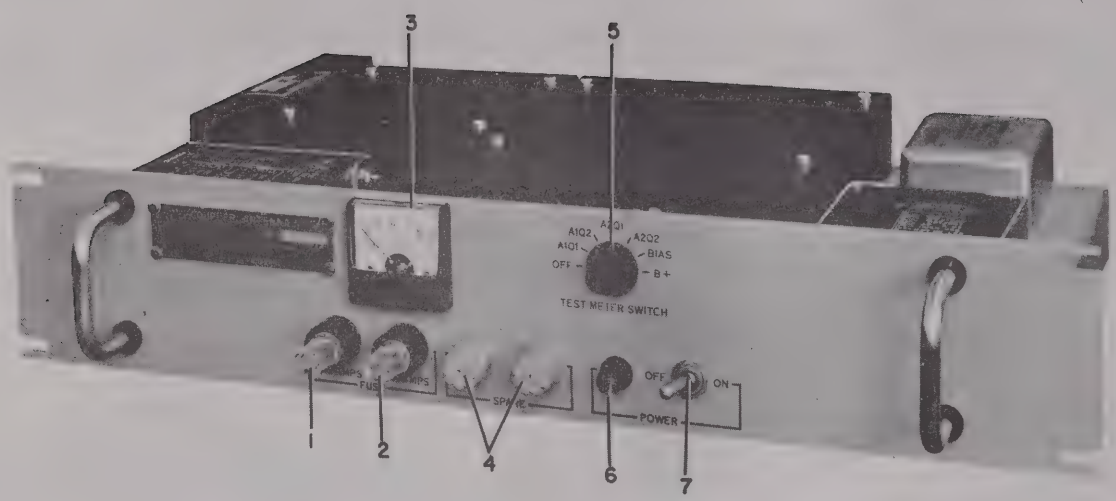


Figure 3-1. Location of Controls for Antenna Coupler KMS-101 (CU-1424/U)

Table 3-2. Normal Meter Indications (115 Volt Line Voltage)

Position	Normal Indication
A1Q1 and A1Q2	40 to 56
A2Q1 and A2Q2	36 to 53
B+	48 - 54
Bias	40 -46

SECTION 4

PRINCIPLES OF OPERATION

4-1. FUNCTIONAL DESCRIPTION.

For this section refer to KMS-101 Schematic Diagram figure 6-3. Input r-f signals are fed to the unit through input jack J9. The signals pass through bandpass filter FL1 and coaxial cables to input transformer T1 of the r-f amplifier assembly A1. The input transformer then steps the signal down to a push-pull pair of common base connected transistors Q1 and Q2. Output transformer T2 of assembly A1 provides a single ended output which is connected through a coax cable to the input of isolator amplifier A2.

Isolator amplifier A2 is a push-pull pair of transistors connected in an emitter follower configuration feeding the eight outputs through transformers T2 through T9.

4-2. INPUT FILTER.

The input filter between the input jack J9 and the input to r-f amplifier A1 is a combination HP-LP filter providing a band pass of 2 mc to 32 mc. This filter provides at least 40 db of attenuation at 1.5 mc and lower frequencies and 40 db of attenuation between 54 mc and 300 mc.

4-3. R-F AMPLIFIER.

The r-f amplifier A1 is a push-pull pair, common base circuit which provides a low noise, low distortion gain of approximately 10 to 12 db. Variable resistors R6 and R7 are used to set the base bias to control the dc collector currents and also to balance second order distortion. Capacitors C11 and C12 are used for distortion balance only. Input resistors R2 and R3 form a basic part of the coupler input impedance and also provide metering points for Q1 and Q2.

4-4. ISOLATOR AMPLIFIER.

Isolator amplifier assembly A2 is a push-pull pair emitter follower circuit. This is an extremely linear circuit which provides the low output impedance necessary to provide a high degree of output isolation, using a straight forward resistance transformer isolation network. The output impedance of each emitter follower is typically less than eight ohms. The output impedance of each output is primarily determined by the series resistors feeding the output transformer; for example the output impedance of J1 is determined by R17 and R18 through T4.

Variable resistors R3 and R4 are used to set the base bias on Q1 and Q2 and also to adjust 2nd order distortion.

4-5. MONITORING CIRCUITS.

The monitoring circuits are provided so that a front panel indication is available to periodically check the operating condition of the coupler. The four transistor dc currents are monitored in effect by coupling the voltage developed across the 6.2 ohm emitter resistors through a high resistance to a front panel meter. The amount of current drawn by the meter circuit is small (50 microamps) compared to collector current (180 to 220 ma) so that the TEST METER SWITCH may be placed in any position while the unit is in operation without effecting performance. B+ and bias are also monitored by simple resistance networks.

4-6. POWER SUPPLY.

The power supply is designed to operate from a 115/230 volt 50-60 cycle source or from a 115 volt, 400 cycle source. Included as part of the power supply is an interference filter which rejects all frequencies by at least 40 db between 14 kc and 150 mc on the incoming power lines. The rectifier circuit is a full wave bridge type using silicon diodes. Filtering is obtained by LC filter circuit L1, C1, C2 on the main chassis. The transistor base bias source of 10 volts is regulated by Zener diode CR5 on power board A3.

SECTION 5

TROUBLESHOOTING

5-1. PRELIMINARY CHECK.

Improper operation of electronic equipment can often be quickly located by visual inspection. In case of trouble, the following points should be checked:

a. Fuses - light if blown or defective
b. POWER Lamp - should light with the POWER switch in the ON position
c. Meter Indication - Failure to indicate in a given position indicates a defect in that area.

5-2. TROUBLE SHOOTING.

The following dc measurements may be made internally after removal of covers over assemblies A1 and A2. Four screws hold each cover in place. To remove covers loosen screws and lift cover straight up. Table 5-1 gives voltages at various points on A1 and A2.

All voltages are given relative to chassis and should be measured using a vacuum tube voltmeter.

Table 5-1. Voltage Measurements

POINT	TYPICAL VOLTAGE
A1E1	+30 dc
A1E2	+10 dc
A1E3	+0.8 to +1.1 dc
A1E4	+0.8 to +1.1 dc
A2E1	+30 dc
A2E2	+10 dc
A2E3	+0.9 to +1.25 dc
A2E4	+0.9 to +1.25 dc
Across terminals 1 and 2 of line filter FL1.	115 ac

SECTION 6

REPAIR

6-1. GENERAL COMPONENT REPLACEMENT.

Components on printed circuit boards are replaced by conventional techniques. If leads have been bent over on the solder side then the component leads should be snipped and the lead pushed through the board. If leads are not bent over, then the component may be removed from the top of the board without clipping leads. Minimum heat should always be used for removal of small components.

6-2. TRANSISTOR OR TRANSFORMER REPLACEMENT.

To replace transistors or transformers on A1 and A2 the printed circuit assemblies must be raised from the chassis. This is accomplished by removing four screws from each side of board which go through the chassis. Also the two 10-32 nuts which hold the transistor to the chassis must be removed. On A1 the r-f cables should also be disconnected. Normally there is enough slack on r-f cables and power leads to allow the boards to be raised to a point that permits access to the dip solder side. Transistors are removed by heating the three connections on the top of the board and pulling. This should be done carefully so as not to damage the printed leads.

CAUTION

A solder gun should not be used for transistor replacements.

Reassembly is accomplished by reverse procedure. Before the through screws are tightened, be sure notches on edges of the PC board are clear of the tapped holes in the spacer bars. Nuts on transistors should be tightened to 12 inch-pounds maximum. It is important that transistor mounting nuts be tight so good heat conduction is obtained to the chassis.

6-3. TESTING AND ADJUSTMENT.

After replacement of a defective component, the gain response and intermodulation distortion should be checked. The replacement of most components does not require readjustment. However, if a transistor is replaced, some adjustment is required to optimize 2nd order intermodulation distortion. If a transistor is replaced on r-f amplifier A1 then adjustments of isolator amplifier A2 should not be changed. Conversely, a replacement on assembly A2 should not affect the adjustments on r-f amplifier A1. To gain access to the adjustments, the cover must be removed from the assembly to be adjusted. Figure 6-1 gives the test setup to be used in both checking and adjusting Antenna Coupler KMS-101. Table 6-1 lists the necessary test equipment and figure 6-2 locates the adjustments. To adjust the unit, proceed as follows:

NOTE

If the required test equipment is not available, the adjustments associated with the transistor pair on the repaired assembly should be adjusted to obtain an indication of 50 on the front panel test meter. An indication of 50 on the front panel test meter insures that 2nd order products will be at least 60 db down.

Table 6-1. REQUIRED TEST EQUIPMENT

EQUIPMENT	TYPE	QUANTITY
Signal Generator	Hewlett Packard, Model HP606C or equivalent	2
Power Combiner	Microlab Series DA-3 or equivalent	1
RF Voltmeter	Boonton Model 91C or equivalent	1
Power Combiner	Microlab Series DA-3 or equivalent	1
Attenuator	Microlab Series PA-10 or equivalent	1
Bandpass-Filter (18 to 32 mc)	Burnell & Co., Inc. S-54655 or equivalent	1
Receiver	Stoddard Model NM20B or equivalent	1

Step 1. Place the TEST METER SWITCH in the position which corresponds to the transistor which was replaced. The front panel should indicate 50.

Step 2. If a transistor on A1 is being monitored adjust potentiometers A1R7, A1R6 and capacitors A1C12, A1C11 to obtain a front panel meter indication of 50. If a transistor on A2 is being monitored, adjust potentiometers A2R3 and A2R4 to obtain a meter indication of 50.

Step 3. Connect the Antenna Coupler into the test setup as shown in figure 6-1.

Step 4. Turn off signal generator No. 2 and turn on signal generator No. 1. Connect the rf voltmeter to the output of the power combiner.

Step 5. Adjust signal generator No. 1 for a frequency of 25 mc and an indication of 0.25 volt on the rf voltmeter.

Step 6. Tune the receiver to 25 mc. Note the db indication on the receiver. This indication is the reference level.

Step 7. Adjust signal generator No. 1 for a frequency of 32 mc and 0.25 volt level on the rf voltmeter.

Step 8. Turn off signal generator No. 1 and turn on signal generator No. 2.

Step 9. Adjust signal generator No. 2 for a frequency of 7 mc and an indication of 0.25 volt on the rf voltmeter.

Step 10. With both generators on, tune the receiver to a frequency of 25 mc and note the db indication on the receiver. This indication should be at least 70 db down from the reference level in step 9.

Step 11. Adjust potentiometers R6, R7 in conjunction with capacitors C11 and C12 on assembly A1 or potentiometers R3 and R4 on assembly A2 for a null. This will normally null to near -80 db.

Step 12. Turn off signal generator No. 2 and adjust signal generator No. 1 for a frequency of 8 mc and a 0.25 volt indication on the rf voltmeter.

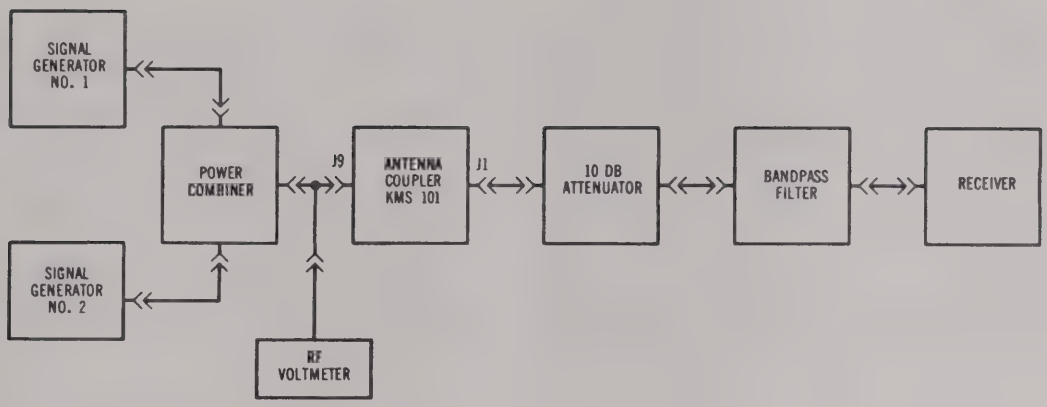


Figure 6-1. Intermodulation Test Setup (Typical) for Antenna Coupler KMS-101 (CU-1424/U)

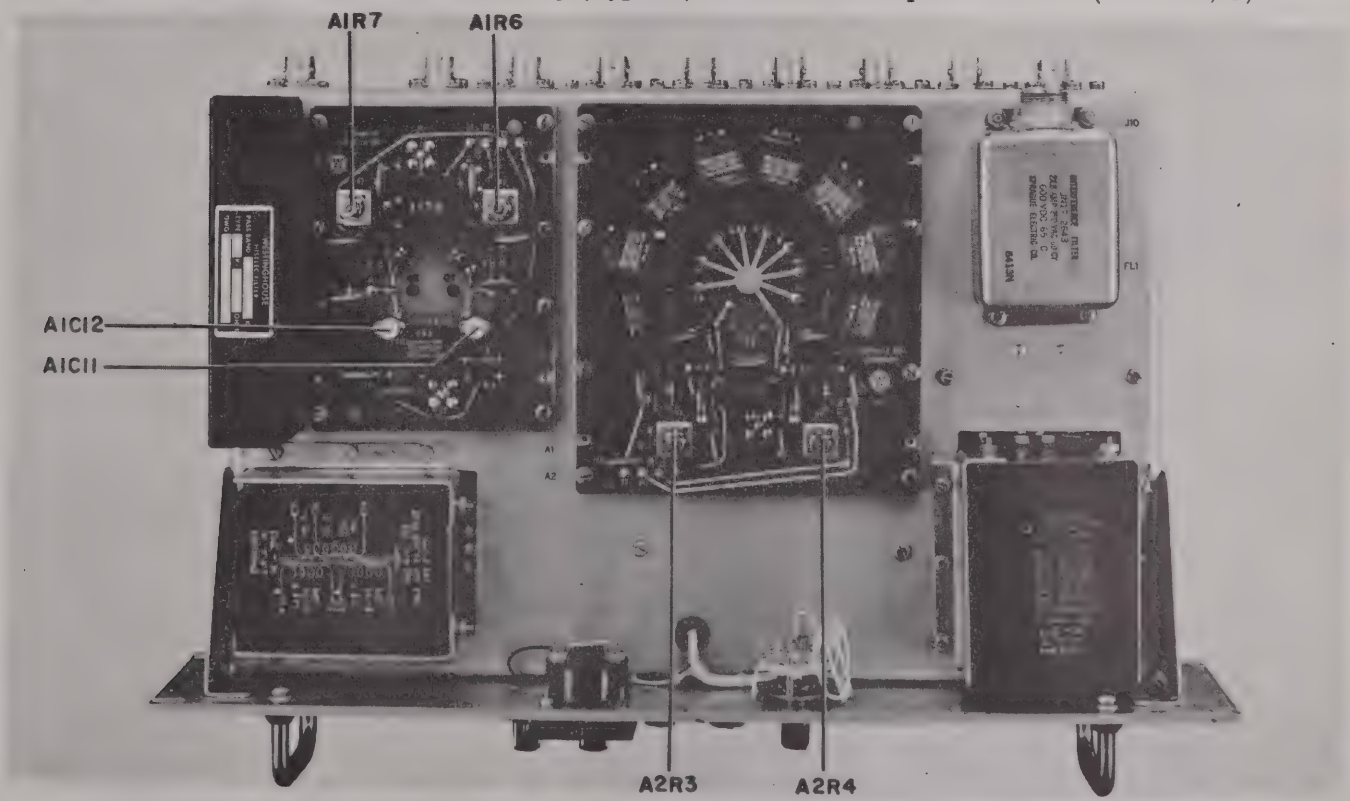


Figure 6-2. Location of Adjustments for Antenna Coupler, KMS-101 (CU-1424/U)

Table 6-1. REQUIRED TEST EQUIPMENT (Continued)

Step 13. Tune the receiver to a frequency of 8 mc. Note the db indication on the receiver. This indication is the reference level.

Step 14. Adjust signal generator No. 1 for a frequency of 18 mc and 0.25 volt level.

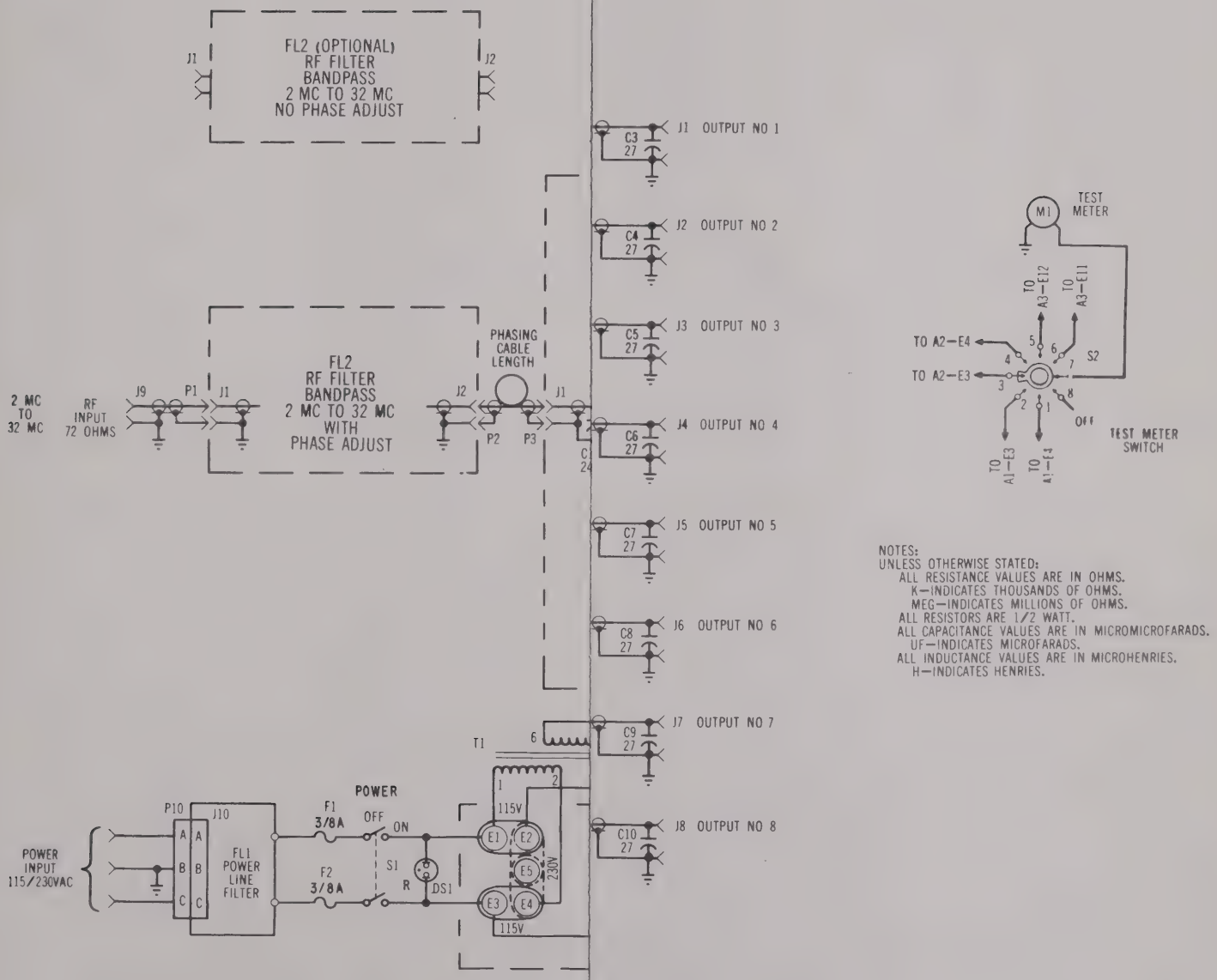
Step 15. Turn on signal generator No. 2 and turn off signal generator No. 1. Adjust signal generator No. 2 for a frequency of 10 mc and a 0.25 volt indication on the rf voltmeter.

Step 16. Tune the receiver to a frequency of 8 mc and note the dc indication on the receiver. This indication should be at least 70 db down from the reference level in step 13.

Step 17. If the product in step 16 (8 mc) is not 70 db down, adjust potentiometer R6, R7 in conjunction with capacitors C11 and C12 on assembly A1 or potentiometers R3 and R4 on assembly for 70 db. Proper adjustment is when the products of step 10 (25 mc) and step 16 (8 mc) are both at least 70 db down.

Step 18. Check the front panel meter indication for each position of the TEST METER SWITCH. The indications should be within the limits established in table 3-2.

Step 19. If the front panel meter indications are not within the limits in table 3-2 or the product frequencies are not at least 70 db down, the procedure must be repeated until both requirements are met.



NOTES:
UNLESS OTHERWISE STATED:
ALL RESISTANCE VALUES ARE IN OHMS.
K—INDICATES THOUSANDS OF OHMS.
MEG—INDICATES MILLIONS OF OHMS.
ALL RESISTORS ARE 1/2 WATT.
ALL CAPACITANCE VALUES ARE IN MICROMICROFARADS.
UF—INDICATES MICROFARADS.
ALL INDUCTANCE VALUES ARE IN MICROHENRIES.
H—INDICATES HENRIES.

pler, KMS-101 (CU-1424/U), Schematic Diagram

Table 6-1. REQUIRED TEST EQUIPMENT (Continued)

Step 13. Tune the receiver to a frequency of 8 mc. Note the db indication on the receiver. This indication is the reference level.

Step 14. Adjust signal generator No. 1 for a frequency of 18 mc and 0.25 volt level.

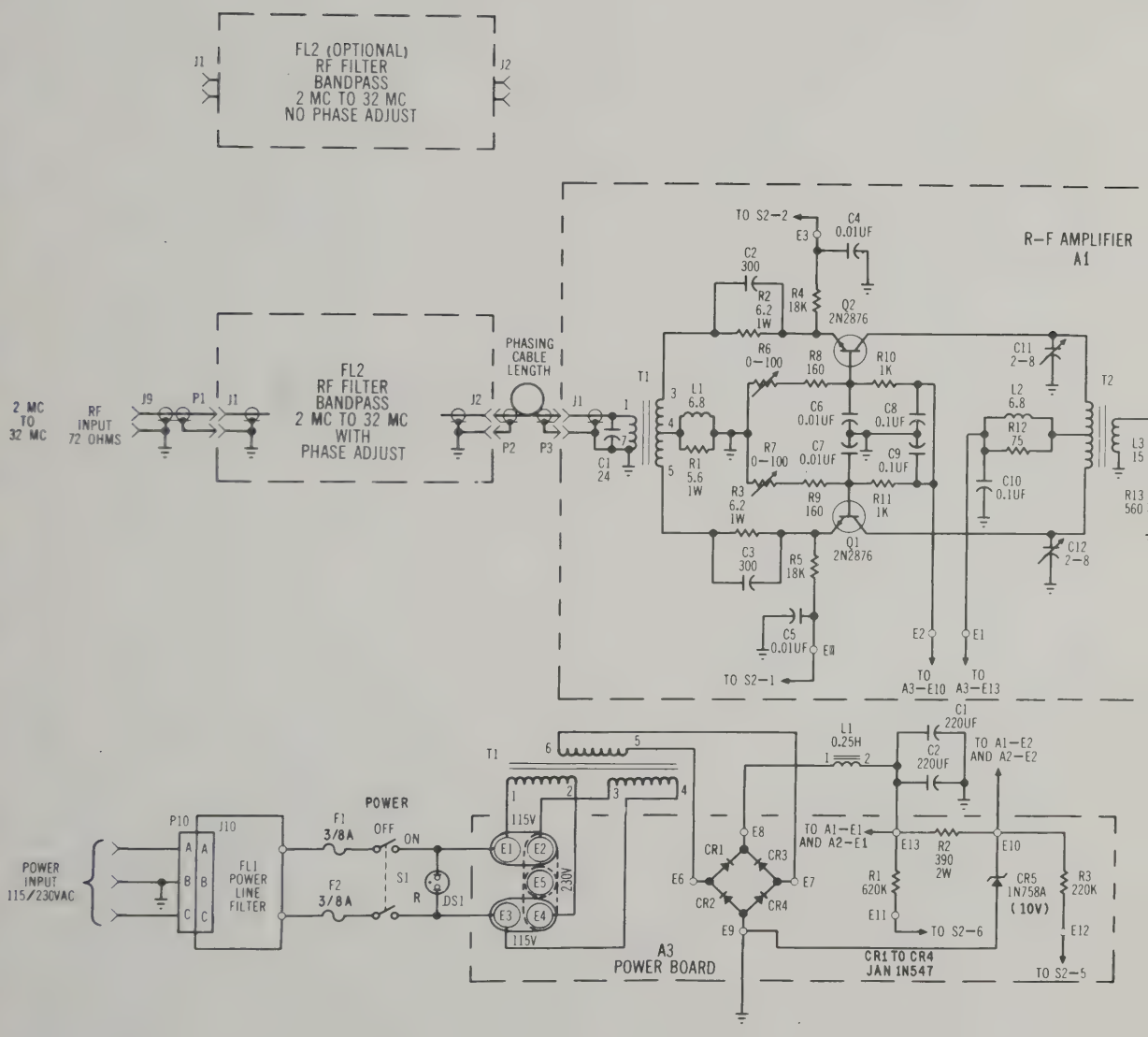
Step 15. Turn on signal generator No. 2 and turn off signal generator No. 1. Adjust signal generator No. 2 for a frequency of 10 mc and a 0.25 volt indication on the rf voltmeter.

Step 16. Tune the receiver to a frequency of 8 mc and note the dc indication on the receiver. This indication should be at least 70 db down from the reference level in step 13.

Step 17. If the product in step 16 (8 mc) is not 70 db down, adjust potentiometer R6, R7 in conjunction with capacitors C11 and C12 on assembly A1 or potentiometers R3 and R4 on assembly for 70 db. Proper adjustment is when the products of step 10 (25 mc) and step 16 (8 mc) are both at least 70 db down.

Step 18. Check the front panel meter indication for each position of the TEST METER SWITCH. The indications should be within the limits established in table 3-2.

Step 19. If the front panel meter indications are not within the limits in table 3-2 or the product frequencies are not at least 70 db down, the procedure must be repeated until both requirements are met.


FL2 (OPTIONAL)
RF FILTER
BANDPASS
2 MC TO 32 MC
NO PHASE ADJUST
J1
J2
R-F AMPLIFIER
A1
TO S2-2
E3
C4
0.01UF
C2
300
R2
6.2
1W
R4
18K
Q2
2N2876
R6
0-100
R8
160
R10
1K
C11
2-8
T2
L2
6.8
R12
75
C6
0.01UF
C8
0.1UF
C7
0.01UF
C9
0.1UF
C10
0.1UF
R7
0-100
R3
6.2
1W
R9
160
R11
1K
Q1
2N2876
C3
300
R5
18K
C12
2-8
C5
0.01UF
E4
TO S2-1
E2
E1
TO
A3-E10
TO
A3-E13
2 MC
TO
32 MC
RF
INPUT
72 OHMS
J9
P1
J1
FL2
RF FILTER
BANDPASS
2 MC TO 32 MC
WITH
PHASE ADJUST
J2
PHASING
CABLE
LENGTH
P2
P3
J1
T1
C1
24
L1
6.8
R1
5.6
1W
POWER
INPUT
115/230VAC
P10
J10
A
B
C
FL1
POWER
LINE
FILTER
F1
3/8A
F2
3/8A
OFF
ON
S1
R
DS1
115V
230V
T1
E1
E2
E5
E3
E4
C1
220UF
C2
220UF
L1
0.25H
TO A1-E2
AND A2-E2
TO A1-E1
AND A2-E1
E8
CR1
CR3
E6
E7
CR2
CR4
E9
E13
R2
390
2W
E10
R1
620K
E11
CR5
1N758A
(10V)
R3
220K
E12
TO S2-6
TO S2-5
A3
POWER BOARD
CR1 TO CR4
JAN 1N547

SECTION 7 PARTS LIST

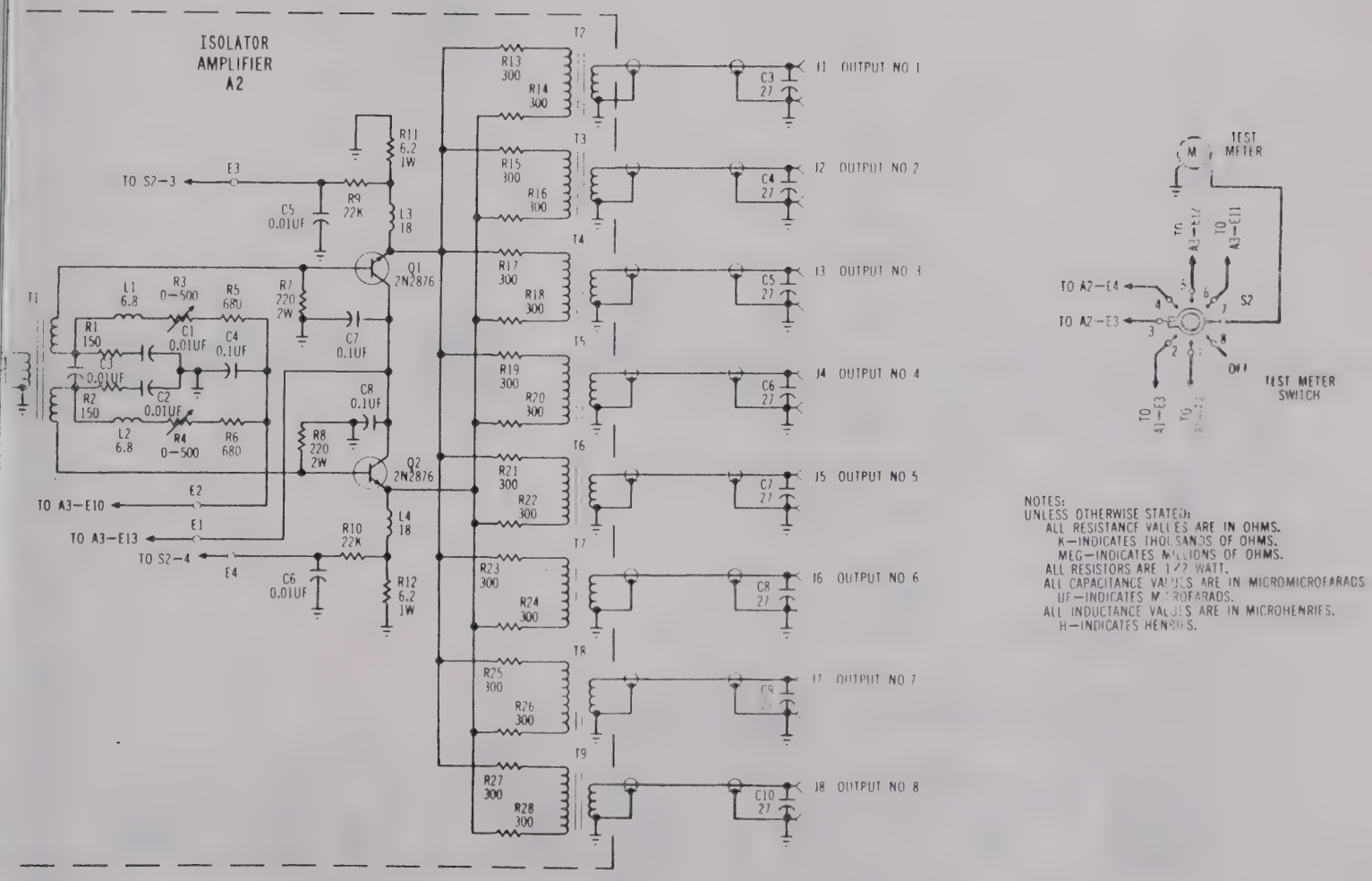
Table 7-1. List of Replaceable Parts

DESIGNATION	NAME & DESCRIPTION	FUNCTION
C1	Capacitor, (220 μF) CE12C221G	Power Supply Filter
C2	Same as C1	
C3	Capacitor, Mica 328C196H76	Impedance Correction J1
C4	Same as C3	Impedance Correction J2
C5	Same as C3	Impedance Correction J3
C6	Same as C3	Impedance Correction J4
C7	Same as C3	Impedance Correction J5
C8	Same as C3	Impedance Correction J6
C9	Same as C3	Impedance Correction J7
C10	Same as C3	Impedance Correction J8
DS1	Lamp NE-2D	Pilot Light
F1	Fuse F02B250V 3/8A	Power Input Fuse
F2	Same as F1	Power Input Fuse
F3	Same as F 1	Spare Fuse
F4	Same as F1	Spare Fuse
FL1	Radio Interference Filter 335C699H03	Power Line Filter
FL2	Filter, R. F. 2 to 32 MC 328D769G01	R-F Filter, Band Pass
L1	Filter, Inductor, 245B934H01	Power Supply Choke
M1	Meter, Simpson 1212C, 100 UA	Meter Test Points
P1	Connector, RF 335C637H03	RF Filter Input
P2	Same as P1	RF Filter Output
P3	Same as P1	A1 Input
P4	Same as P1	A1 Output
P5	Same as P1	A2 Input
P10	Plug, Power MS3106-14S-7S(C)	Power Input
J1	Receptacle, MS35319 (Type "C")	RF Output 1
J2	Same as J1	RF Output 2
J3	Same as J1	RF Output 3
J4	Same as J1	RF Output 4
J5	Same as J1	RF Output 5
J6	Same as J1	RF Output 6
J7	Same as J1	RF Output 7
J8	Same as J1	RF Output 8
J9	Same as J1	RF Input
S1	Switch, MS35059-22, DPST	Power

DESIGNATION	NAME & DESCRIPTION	FUNCTION
S2	Switch, Rotary 347C627H01	Meter Point Sel.
XDS1	Holder, Lamp	Power Lamp Holder
XF1	Holder, Fuse FHL17G	Power Input Fuse Holder
XF2	Same as XF1	Power Input Fuse Holder
XF3	Holder, Fuse FHL20G	Spare Fuse Holder
XF4	Same as XF3	Spare Fuse Holder
T1	Transformer, Power, 245B933H01	Power Transformer
A1C1	Capacitor, Fixed Mica 24 $\mu\mu$F 336C029H36	Impedance Correction
A1C2	Capacitor, Fixed Mica - 300 $\mu\mu$F 328C196H32	Input Compensation
A1C3	Same as A1C3	Input Compensation
A1C4	Capacitor, 0.01 μF CK63Y103Z	Meter Bypass
A1C5	Same as A1C4	Meter Bypass
A1C6	Same as A1C4	Base Bypass
A1C7	Same as A1C4	Base Bypass
A1C8	Capacitor, Fixed 0.1 μF 54B7069H11	Bias Bypass
A1C9	Same as A1C8	Bias Bypass
A1C10	Same as A1C8	B+ Bypass
A1C11	Capacitor, Variable 2-8 $\mu\mu$F 788C200H02	Bal. Adjust
A1C12	Same as A1C11	Bal. Adjust
A1J1	Receptacle, 54B7000H01	RF Input
A1J2	Same as A1J1	RF Output
A1L1	Coil, RF 6.8 μF 54B7108H04	RF Choke
A1L2	Same as A1L1	RF Choke
A1L3	Coil, RF 15 μH 54B7108H39	RF Choke
A1Q1	Transistor 128C007	RF Amplifier
A1Q2	Same as A1Q1	RF Amplifier
A1R1	Resistor, 1W, 5.6 Ohm RC32GF5R6J	T1 Balance
A1R2	Resistor, 1W, 6.2 Ohm RC32GF6R2J	Input Termination
A1R3	Same as A1R2	Input Termination
A1R4	Resistor, 18K, 1/2W RC20GF183J	Meter Resistor
A1R5	Same as A1R4	Meter Resistor
A1R6	Resistor, Variable, RV6LAYSA101A	Base Bias, Q1
A1R7	Same as A1R6	Base Bias, Q2
A1R8	Resistor, 1/2W, 160 Ohm RC20GF161J	Bias Divider
A1R9	Same as A1R8	Bias Divider
A1R10	Resistor, 1/2W, 1K, RC20GF102J	Bias Divider

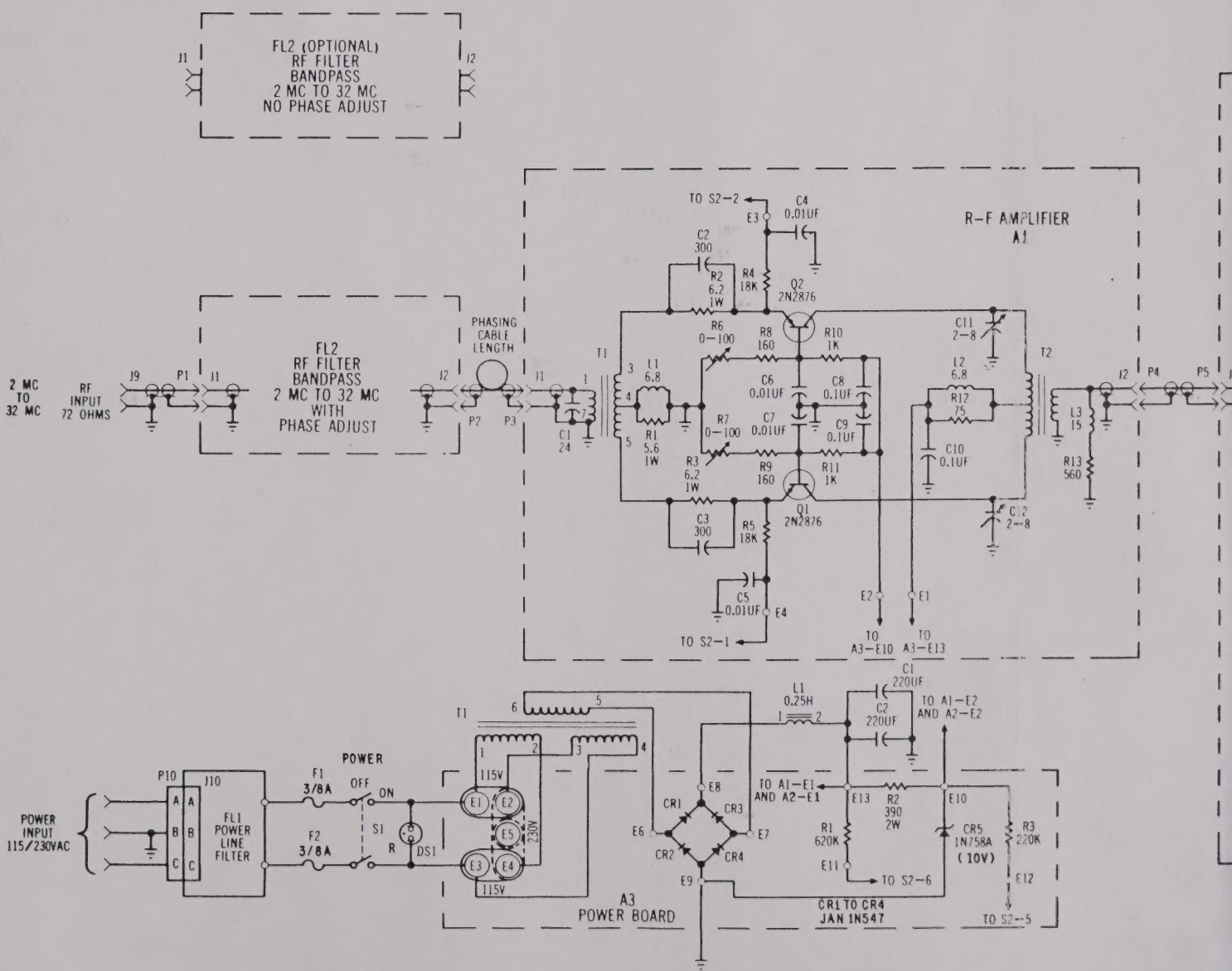
DESIGNATION	NAME & DESCRIPTION	FUNCTION
A1R11	Same as A1R10	Bias Divider
A1R12	Resistor, 1/2W, 75 Ohm, RC20GF750J	T2 Balance
A1R13	Resistor, 1/2W, 560 Ohms RC20GF561J	Loading
A1T1	Transformer, RF377A940H01	Input Signal
A1T2	Transformer, RF152A702H01	Output Signal
A2C1	Capacitor, 0.01μF CK63Y103Z	Decoupling
A2C2	Same as A2C1	Decoupling
A2C3	Same as A3C1	T1, CT Coupling
A2C4	Capacitor 0.1 μF 54B7069H11	Bias Bypass
A2C5	Same as A2C1	Meter Bypass
A2C6	Same as A2C1	Meter Bypass
A2C7	Same as A2C4	Decoupling
A2C8	Same as A2C4	Decoupling
A2J1	Receptacle, 54B7000H01	RF Input
A2L1	Coil, RF, 6.8 μH, 54B7108H04	RF Choke
A2L2	Same as A2L1	RF Choke
A2L3	Coil, RF, 18 μH, 54B7108H40	RF Choke
A2L4	Same as A2L3	RF Choke
A2Q1	Transistor 2N2876 (128C007H01)	RF Amplifier
A2Q2	Same as A2Q1	RF Amplifier
A2R1	Resistor, 1/2W, 150 Ohms RC20GF151J	T1 Balance
A2R2	Same as A2R1	T1 Balance
A2R3	Resistor, Variable RV6LAYSA501A	Base Bias Q1
A2R4	Same as A2R3	Base Bias Q2
A2R5	Resistor, 1/2W, 680 Ohms RC20GF681J	Bias Divider
A2R6	Same as A2R5	Bias Divider
A2R7	Resistor, 2W, 220 Ohm, RC42GF221J	T1 Termination
A2R8	Same as A2R7	T1 Termination
A2R9	Resistor, 22K, 1/2W, RC20GF223J	Meter Resistor
A2R10	Same as R9	Meter Resistor
A2R11	Resistor, 1W, 6.2 Ohm RC32GF6R2J	Emitter Bias Q1
A2R12	Same as A2R11	Emitter Bias Q2
A2R13	Resistor, 1/2W, 300 Ohm, RC20GF301J	Isolation, Matching
A2R14	Same as A2R13	Isolation Matching
A2R15	Same as A2R13	Isolation Matching
A2R16	Same as A2R13	Isolation Matching
A2R17	Same as A2R13	Isolation Matching

DESIGNATION	NAME AND DESCRIPTION	FUNCTION
A2R18	Same as A2R13	Isolation Matching
A2R19	Same as A2R13	Isolation Matching
A2R20	Same as A2R13	Isolation Matching
A2R21	Same as A2R13	Isolation Matching
A2R22	Same as A2R13	Isolation Matching
A2R23	Same as A2R13	Isolation Matching
A2R24	Same as A2R13	Isolation Matching
A2R25	Same as A2R13	Isolation Matching
A2R26	Same as A2R13	Isolation Matching
A2R27	Same as A2R13	Isolation Matching
A2R28	Same as A2R13	Isolation Matching
A2T1	Transformer, RF 152A702H01	RF Input
A2T2	Transformer, RF 377A935H01	RF Output J1
A2T3	Same as A2T2	RF Output J2
A2T4	Same as A2T2	RF Output J3
A2T5	Same as A2T2	RF Output J4
A2T6	Same as A2T2	RF Output J5
A2T7	Same as A2T2	RF Output J6
A2T8	Same as A2T2	RF Output J7
A2T9	Same as A2T2	RF Output J8
A3CR1	Diode Jan-1N547	Rectifier
A3CR2	Same as A3CR1	Rectifier
A3CR3	Same as A3CR1	Rectifier
A3CR4	Same as A3CR1	Rectifier
A3CR5	Diode, Zener, USN 1N758A	Bias Regulator
A3R1	Resistor, 1/2W, 620K, RC20GF624J	B+ Metering
A3R2	Resistor, 2W, 390 Ohm, RC42GF391J	Bias Dropping
A3R3	Resistor, 1/2W, 220K, RC20GF224J	Bias Metering



NOTES:
UNLESS OTHERWISE STATED:
ALL RESISTANCE VALUES ARE IN OHMS.
K—INDICATES THOUSANDS OF OHMS.
MEG—INDICATES MILLIONS OF OHMS.
ALL RESISTORS ARE 1/2 WATT.
ALL CAPACITANCE VALUES ARE IN MICROMICROFARADS
UF—INDICATES MICROFARADS.
ALL INDUCTANCE VALUES ARE IN MICROHENRIES.
H—INDICATES HENRIES.

Figure 6-3. Antenna Coupler, KMS-101 (CU-1424/U), Schematic Diagram


FL2 (OPTIONAL)
RF FILTER
BANDPASS
2 MC TO 32 MC
NO PHASE ADJUST
J1
J2
2 MC
TO
32 MC
RF
INPUT
72 OHMS
J9
P1
J1
FL2
RF FILTER
BANDPASS
2 MC TO 32 MC
WITH
PHASE ADJUST
J2
PHASING
CABLE
LENGTH
P2
P3
J1
T1
C1
24
L1
6.8
R1
5.6
1W
R-F AMPLIFIER
A1
TO S2-2
E3
C4
0.01UF
C2
300
R2
6.2
1W
R4
18K
Q2
2N2876
R6
0-100
R8
160
R10
1K
C6
0.01UF
C8
0.1UF
R7
0-100
C7
0.01UF
C9
0.1UF
R3
6.2
1W
R9
160
R11
1K
C3
300
R5
18K
Q1
2N2876
C5
0.01UF
E4
TO S2-1
E2
E1
TO
A3-E10
TO
A3-E13
C11
2-8
L2
6.8
R12
75
C10
0.1UF
C12
2-8
T2
L3
15
R13
560
J2
P4
P5
POWER
INPUT
115/230VAC
P10
J10
FL1
POWER
LINE
FILTER
F1
3/8A
F2
3/8A
POWER
OFF
ON
S1
R
DS1
T1
115V
230V
115V
E1
E2
E5
E3
E4
A3
POWER BOARD
CR1
CR2
CR3
CR4
E8
E6
E7
E9
C1
220UF
C2
220UF
L1
0.25H
TO A1-E2
AND A2-E2
TO A1-E1
AND A2-E1
E13
R2
390
2W
E10
R1
620K
E11
TO S2-6
CR5
1N758A
(10V)
R3
220K
E12
TO S2-5
CR1 TO CR4
JAN 1N547